

Claims

1. A fuel injection valve for internal combustion engines, having a valve body (1), in which a pistonlike valve needle (5) is disposed in a bore (3), and having a valve seat (9), which is embodied on the end of the bore (3) toward the combustion chamber and which cooperates with a valve sealing face (7) embodied on the valve needle (5), so that by the longitudinal motion of the valve needle (5), the opening of at least one injection opening (11) embodied on the end toward the combustion chamber of the valve body (1) is controlled, characterized in that the valve sealing face (7) and/or the valve seat (9) has microscopic indentations (32; 35; 38).
2. The fuel injection valve of claim 1, characterized in that the microscopic indentations (32; 35; 38) are embodied individually and separately from one another.
3. The fuel injection valve of claim 2, characterized in that the microscopic indentations (32; 35; 38) are embodied as dimples (32).
4. The fuel injection valve of claim 3, characterized in that the dimples (32), viewed in the circumferential direction of the valve needle (5), have a lesser spacing between one another than in the longitudinal direction of the valve needle (5).
5. The fuel injection valve of claim 3, characterized in that the dimples (32), viewed in the circumferential direction of the valve sealing face (7), have a greater spacing between one another than in the longitudinal direction of the valve needle (5).
6. The fuel injection valve of claim 2, characterized in that the microscopic indentations (32; 35; 38) have a spacing (a) from one another of between 5 μm and 500 μm .

7. The fuel injection valve of claim 1, characterized in that the microscopic indentations (32; 35; 38) are embodied as grooves (38).
8. The fuel injection valve of claim 1, characterized in that the microscopic indentations (32; 35; 38) are embodied as groove segments (35).
9. The fuel injection valve of claim 7 or 8, characterized in that the microscopic indentations (32; 35; 38) intersect at least in part.
10. The fuel injection valve of claim 7 or 8, characterized in that the microscopic indentations (32; 35; 38) extend in concentric circles over the entire circumference of the valve sealing face (7) and/or of the valve seat (9).
11. The fuel injection valve of claim 1, characterized in that the microscopic indentations (32; 35; 38) overlap at least in part.
12. The fuel injection valve of claim 1, characterized in that the microscopic indentations (32; 35; 38) have a depth between 0.5 μm and 50 μm , preferably between 3 μm and 20 μm .
13. The fuel injection valve of claim 1, characterized in that the microscopic indentations (32; 35; 38) have a width (b) of between 5 μm and 100 μm , preferably between 10 μm and 50 μm .
14. The fuel injection valve of one of the foregoing claims, characterized in that the microscopic indentations (32; 35; 38) are produced by jet machining, laser machining, hard turning, microembossing, spark erosion, or by lithographic or electrochemical methods.

15. The fuel injection valve of claim 7, characterized in that the grooves (38) are produced by fine turning.

16. The fuel injection valve of claim 14 or 15, characterized in that the microscopic indentations (32; 35; 38) are made after the fine machining of the valve sealing face (7) and of the valve seat (9) and the faces are subsequently postmachined by lapping, fine polishing or finishing.